Remarks

Claim 1 has been amended to indicate that the water soluble oxidant is a persulfate. Support for this amendment is found on page 4, lines 11-14 of the specification. Claim 1 has been further amended to indicate that such process is conducted in the absence of ozone. Support for this limitation is found on page 3, lines 14-16 of the specification.

In addition, claims 4, 6, 8 and 13 have been amended to correct their antecedent basis by replacing the term "peroxygen compound" with the term "persulfate". Consequently, no new matter has been added as a consequence of this amendment.

Pursuant to the Office Action mailed December 8, 2008, claims 1-4 and 9-16 stand rejected under 35 USC 102(b) as being anticipated by Bradley (US Patent 5,849,201). In addition, claims 5-8 stand rejected under 35 USC 103(a) as being obvious over Bradley; and claim 17 stands rejected under 35 USC 103(a) as being obvious over Bradley in view of Lundy (U.S. Patent Application Number 2002/0110509). These rejections are respectfully traversed and reconsideration requested in view of the present amendment and the arguments presented below.

The present invention, as amended, relates to a process for oxidizing organic compounds, typically present as environmental contaminents, comprising treating such organic compounds with a composition comprising a persulfate and a pH modifier which maintains the pH of the composition at about 10 or higher, in the absence of ozone. As is indicated by the Examples, this process is unexpectedly effective to oxidize a large number of organic contaminents, including several (such as benzene, toluene, ethyl benzene, xylene and chlorinated benzenes) which contain aromatic hydrocarbon rings.

In contrast, Bradley discloses a process for remediating aromatic hydrocarbons which involves treatment with ozone in conjunction with a solid state catalyst, a first oxidant other than ozone, and a surfactant (see Column 4, lines 15-25). In this regard, it is noted that Bradley teaches that the use of ozone is essential, stating (at Column 2, lines 21-25) that "Ozone is unique among the stable, industrial usable, safe and environmentally acceptable oxidizing agents in that ozone has a half-life on the order of minutes and can cleave and oxidize benzene and other aromatic ring structures including PAHs".

While Bradley does indicate that a broad variety of "pre-ozone treatment" oxidants can be employed (including hydrogen peroxide, perchlorates, permanganates and persulfates – see

Column 5, lines 6-8), this publication nowhere suggests or discloses the use of a persulfate in the absence of ozone. Indeed, Bradley specifically teaches away from such use, asserting (at Column 2, lines 5-7) that "solid-state oxidants, for example persulfate, are similarly ineffective with respect to PAHs".

Moreover, while Bradley does indicate that a basic pH modifier may be employed, this publication stresses that the reason for adding such a modifier is to increase the efficiency of the ozone. Thus, this patent states (at Column 11, lines 7-12) that "Since ozone is maximally effective at alkaline pHs, it may be useful to add a base to adjust the pH of the mixture, especially with contaminated materials, such as slurries or liquids, that provide acidic mixtures, to achieve a pH above 7, preferably between pH 8 and pH 11, and most preferably about pH 9." Applicants note that this statement would provide no motivation to one of skill in the art to add such a pH modifier in the absence of ozone.

Accordingly, it is noted from the above that Bradley (US Patent 5,849,201) indicates that in order to efficiently oxidize aromatic hydrocarbons: (1) the use of ozone is required due to its "uniqueness"; (2) persulfates are ineffective; and (3) a basic pH modifier may used to increase the efficacy of ozone. Consequently, it is respectfully asserted that this publication does not anticipate or suggest the present claimed process which is conducted in the absence of ozone; and in which a basic pH modifier is used to increase the efficacy of the persulfate.

Lundy (US Patent Application 2002/0110509) discloses the use of a chelated catalyst in combination with a peroxide oxidizing agent. Lundy states (at page 5, paragraph 29) that the peroxides which may be employed include hydrogen peroxide, magnesium peroxide, calcium peroxide and sodium percarbonate. There is no suggestion or disclosure that such chelated catalysts may be effectively employed in conjunction with a persulfate. Accordingly, it is respectfully urged that Lundy, even if read in conjunction with Bradley, does not suggest the present claimed invention.

Overall, therefore, it is respectfully submitted that the present claimed invention, as amended, is neither anticipated nor suggested by the cited publications. Reconsideration of the rejection of such clams is respectfully requested and allowance thereof courteously solicited.

Respectfully submitted,

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